

REMARKS/ARGUMENTS

Favorable reconsideration and allowance of the present patent application are respectfully requested in view of the following remarks. Claims 31 and 32 are pending in the present application and claim 32 has been amended to overcome the 35 U.S.C. 112, 2nd paragraph, rejection. Applicant believes claims 31 and 32 overcome the 35 U.S.C. 103(a) rejections in light of the amendments to claim 32 and the arguments presented below, and place the application in condition for allowance.

35 U.S.C. §112 2nd Paragraph Rejections

Claim 32 was rejected under 35 U.S.C. §112, 2nd paragraph, as indefinite. Applicant respectfully submits amended claim 32 which overcomes the rejection and places the application in condition for allowance.

All of the Examiner's stated reasons for rejecting claim 32 under 35 U.S.C. §112, 2nd paragraph, have been considered and overcome by the amendments to these claims. With regard to the argument that the phrase in claim 32, "subjecting the reducing and oxidative members [H •] and [• OH] to cause a reaction with the decomposed organic substances" appears to be a fragmented phrase has been noted by the Applicant and amended according by replacing the phrase with the following phrase, "whereby the reducing member [H •] and oxidative member [• OH] being subjected to the decomposed organic substances to cause a reaction with the decomposed organic substances."

With regard to the argument that the phrase in claim 32, "liquid developer" has no clear meaning", Applicant respectfully disagrees, but has amended the claim for the sake of expediting the prosecution of this application. Claim 32 has been amended as follows, "A method for reducing a contact angle of a surface of a substrate in order to apply a liquid developer for the sake of etching". Applicant submits that this amendment further clarifies the meaning of the

term "liquid developer" in claim 32 and is consistent with the disclosure invention as outlined in the specification (pages 26 and 27).

Accordingly, Applicant submits that claim 32 is now in compliance 35 U.S.C. 112, 2nd paragraph and withdrawal of this rejection is respectfully requested.

35 U.S.C. §103(a) Rejections

Claims 1, 5-6, 8 and 12-13 were rejected under 35 U.S.C. §103(a) as unpatentable over US Patent No. 6,217,665 (the '665 reference) in view of US Patent No. 6,398,970 (the '970 reference) and Japanese Patent No. JP 7-179629 (the '629 reference).

As previously mentioned, claims 31 and 32 are currently pending in this application. Applicant believes that neither the '037, '073 or '616 references, either alone or in combination, disclose or imply each and every claim limitation recited in independent claim 31 and amended independent claim 32 and, therefore, believes independent claims 31 and 32 are allowable in view of the cited prior art.

The '665 reference discloses a method for washing glass substrate to remove organic substances from the surface thereof by irradiating ultraviolet rays (UV) ('665, col. 2 lines 24-49). The UV is irradiated in air to the glass substrate. By irradiating UV to the surface of the substrate, the organic substances on the surface of the substrate can be decomposed to produce products of low molecular weights, and at the same time, the atmospheric oxygen is converted into oxygen radicals, thereby causing reaction with decomposed organic substances and oxygen radicals ('665, col. 2 lines 24-49). Therefore, the oxygen-containing atmosphere is required by the '665 reference for producing the oxygen radicals.

In contrast, in accordance with the claims 31 and 32, the substrate to be washed is placed into "a mixed atmosphere of an inert gas and water vapor" without the need for atmospheric air. The water vapor in the atmosphere causes not only the production of oxygen radicals, but also

the reduction of radicals for reacting decomposed organic substances, while inert gas contributes by excluding the need for air in the atmosphere, which would otherwise consume considerable UV on the way to the substrate.

The previous Office Action stated that the '665 reference discloses the irradiation of UV in atmospheric air which is a mixture of oxygen, water vapor and nitrogen because water vapor is inherently included in atmospheric air, although water vapor is never mentioned in the '665 reference. However, the amount of water vapor, if included in atmospheric air, is an extremely small quantity, so it is unable to produce reducing radicals by the irradiation of UV necessary for reacting decomposed organic substances. Further, according to the present application, H₂O is a source of oxygen and hydrogen to be converted into radicals when the substrate is placed in a UV irradiation field free of atmospheric air, while O₂ is required in the UV irradiation field of the '665 reference.

Accordingly, even if the dielectric harrier discharge lamp disclosed by the '970 or '629 references is used in place of the discharge lamp of the '665 reference, each and every claim limitation of claims 31 and 32 are not disclosed or implied. Therefore, Applicant believes independent claims 31 and 32 are allowable in view of the cited prior art.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, at the telephone number listed below.

With best regards,

Very truly yours,
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